

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-12-02T10:11:23.970
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 617976559021588608
 2Mass ID (if available) : 09363642+1459513

ICRS Star Coord at Epoch: 09h 36m 36.40809s +14:59:50.91739s

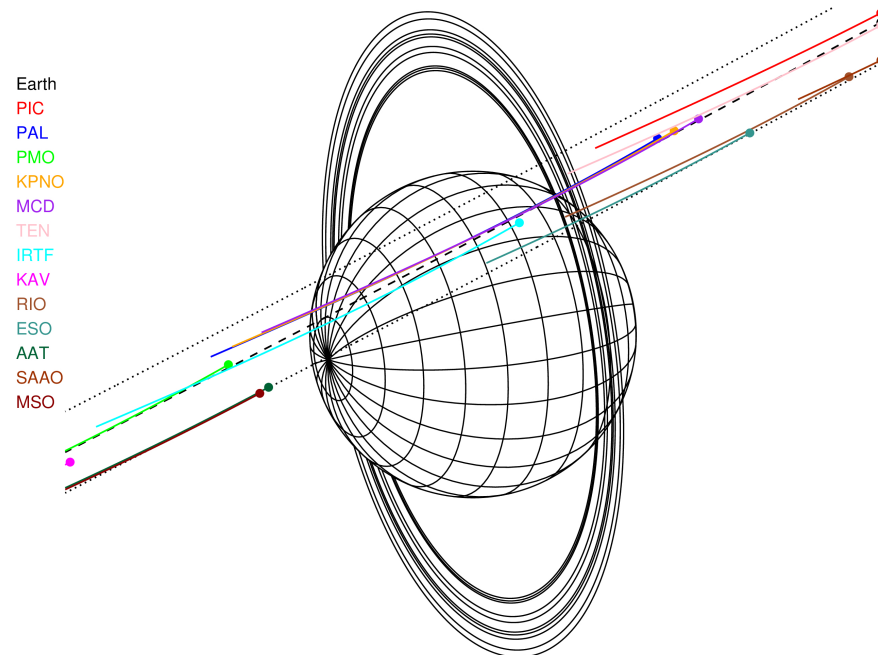
RUWE (>1.4 is poor) : 1.02
 K magnitude : 10.500
 G magnitude : 12.670
 RP magnitude : 11.985
 BP magnitude : 13.210
 DUPflag : 0
 Distance (au) : 18.079
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.54
 Sun-Target sep (deg) : 107.96
 Sun-Moon sep (deg) : 116.77
 B (ring opening deg) : 25.75
 PA of pole (deg) : 99.88

#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



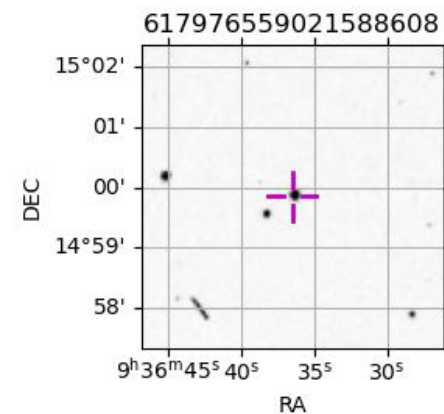
2043-12-02T10:11:23.9700 α: 09 36 36.4081 δ: +14 59 50.917 C/A 1.082° PA 220.06 deg v_sky - 2.53 km/s D 18.08 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2043-12-02T10:11:23 K10.50 G12.67 PgtRgt

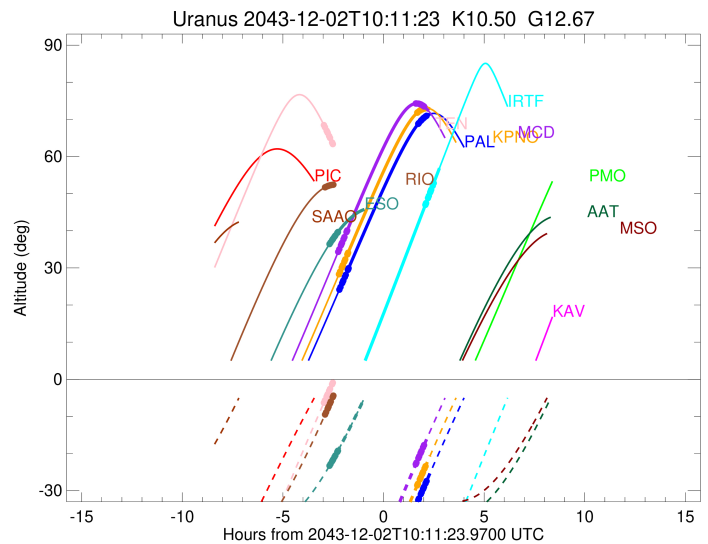
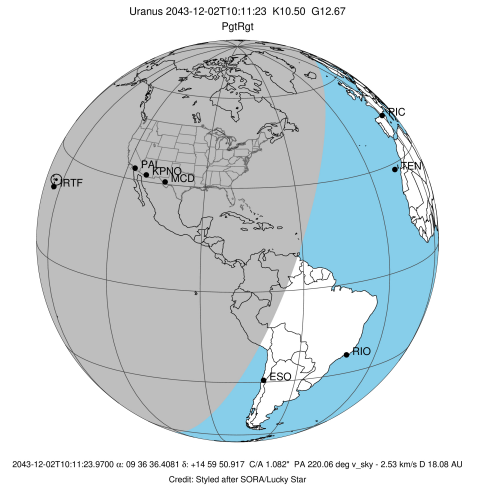


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1	++++++	+ +		DEC 02 08:00 - DEC 02 12:33	PieRin
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	++++++	+ +		DEC 02 07:59 - DEC 02 12:30	PieRin
MCD	McDonald Obs. 2.7m	30.7	256.0	++++++	+ +		DEC 02 07:57 - DEC 02 12:25	PieRin
TEN	Teide Obs./Tenerife	28.3	343.5	++			DEC 02 07:14 - DEC 02 07:17	PnnRin
IRTF	Mauna Kea/IRTF	19.8	204.5		+		DEC 02 12:58 - DEC 02 12:58	PneRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++	+		DEC 02 07:18 - DEC 02 07:25	PinRin
ESO	European Southern Obs	-29.3	289.3	++	+		DEC 02 07:31 - DEC 02 07:34	PinRin
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

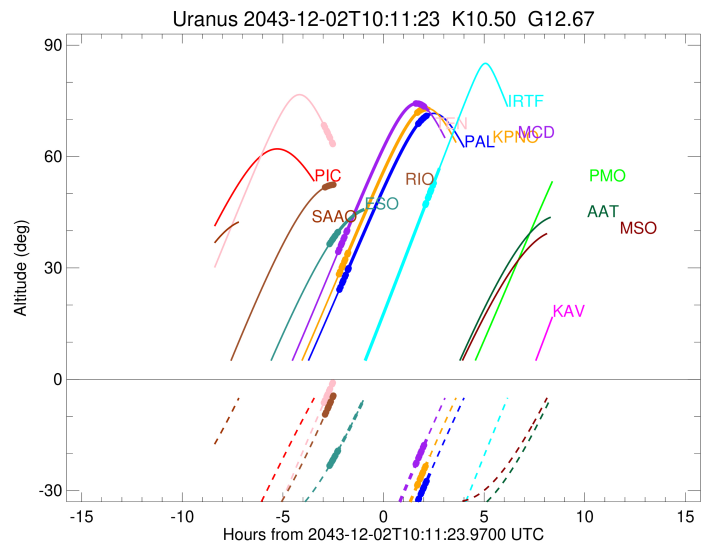
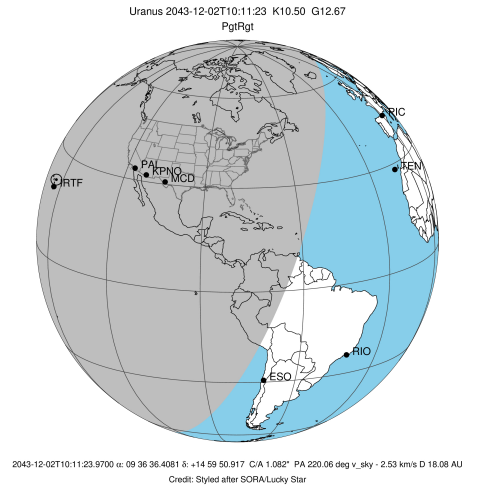


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-12-02T10:31:29.710
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 617976559021588608
 2Mass ID (if available) : 09363642+1459513
 ICRS Star Coord at Epoch: 09h 36m 36.40809s +14:59:50.91739s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 10.500
 G magnitude : 12.670
 RP magnitude : 11.985
 BP magnitude : 13.210
 DUPflag : 0
 Distance (au) : 18.078
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.54
 Sun-Target sep (deg) : 107.96
 Sun-Moon sep (deg) : 117.14
 B (ring opening deg) : 25.75
 PA of pole (deg) : 99.88
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.046
 C/A sky separation (km) : 13718.4
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ural11.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ural11.bsp
 ural61.bsp
 vgr2.ural61.bsp
 peph.ural60.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



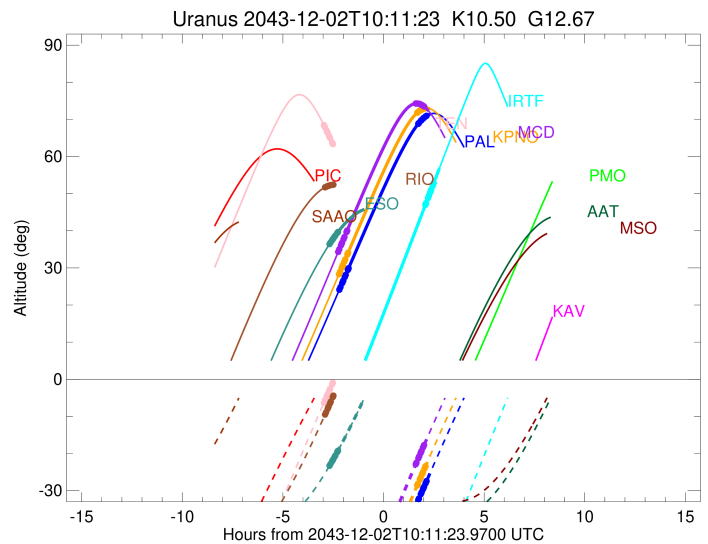
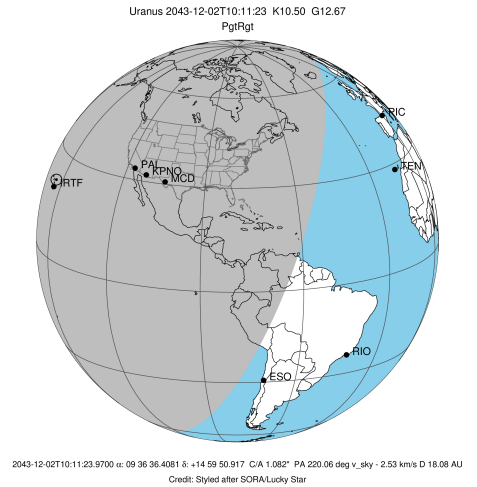
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-12-02T08:00:47.540		24.34	-77.56	50887.64	-5.64		
lambda	I	2043-12-02T08:03:20.330		24.88	-77.31	50026.71	-5.64		
delta	I	2043-12-02T08:08:26.573		25.95	-76.75	48300.35	-5.64		
gamma	I	2043-12-02T08:10:26.938		26.37	-76.51	47621.66	-5.64		
eta	I	2043-12-02T08:11:45.952		26.64	-76.35	47176.12	-5.64		
beta	I	2043-12-02T08:16:18.388		27.60	-75.75	45642.83	-5.64		
alpha	I	2043-12-02T08:19:03.308		28.17	-75.37	44702.93	-5.64		
4	I	2043-12-02T08:25:31.713	b	29.53	-74.42	42556.48	-5.63		
5	I	2043-12-02T08:26:05.885	b	29.65	-74.33	42255.81	-5.61		
6	I	2043-12-02T08:27:16.731	b	29.90	-74.15	41869.40	-5.62		
Uranus	I	2043-12-02T08:24:09.335		29.24	-74.63	25512.23		-35.98	-37.24
Uranus	E	2043-12-02T12:33:21.046		71.53	-24.62	25459.57		59.08	60.22
6	E	2043-12-02T11:54:47.279	b	68.79	-32.59	41831.02	6.17		
5	E	2043-12-02T11:55:50.871	b	68.91	-32.37	42168.81	6.17		
4	E	2043-12-02T11:56:34.295	b	68.99	-32.22	42554.83	6.19		
alpha	E	2043-12-02T12:02:34.094	b	69.62	-30.98	44749.38	6.23		
beta	E	2043-12-02T12:05:01.834	b	69.85	-30.46	45670.66	6.25		
eta	E	2043-12-02T12:09:03.374	b	70.21	-29.63	47176.12	6.27		
gamma	E	2043-12-02T12:10:15.923	b	70.31	-29.38	47631.55	6.28		
delta	E	2043-12-02T12:12:02.313	b	70.45	-29.01	48300.35	6.29		
lambda	E	2043-12-02T12:16:36.172	b	70.78	-28.07	50026.71	6.32		
epsilon	E	2043-12-02T12:20:35.032	b	71.02	-27.25	51537.70	6.34		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-12-02T10:28:33.790
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : KPNO
 Location : Kitt Peak Natl Obs
 Latitude (deg) : 31.96333
 E. Longitude (deg) : 248.40000
 Altitude (km) : 2.120
 Gaia source ID : 617976559021588608
 2Mass ID (if available) : 09363642+1459513
 ICRS Star Coord at Epoch: 09h 36m 36.40809s +14:59:50.91739s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 10.500
 G magnitude : 12.670
 RP magnitude : 11.985
 BP magnitude : 13.210
 DUPflag : 0
 Distance (au) : 18.078
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.54
 Sun-Target sep (deg) : 107.96
 Sun-Moon sep (deg) : 117.21
 B (ring opening deg) : 25.75
 PA of pole (deg) : 99.88
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.045
 C/A sky separation (km) : 13697.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



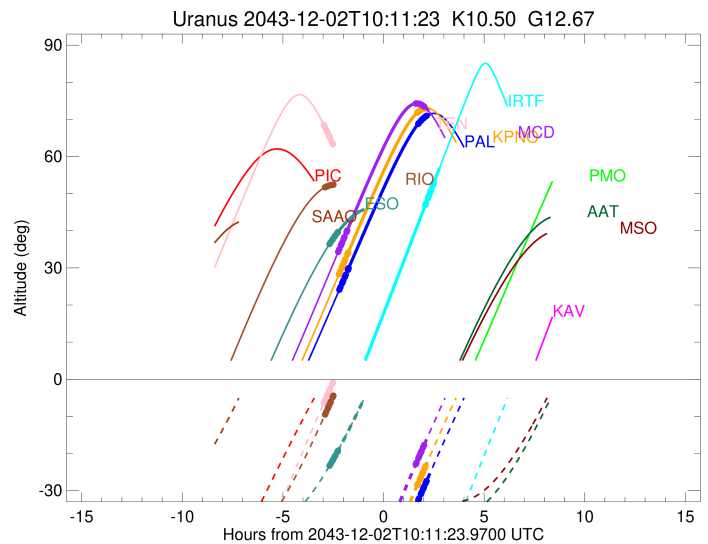
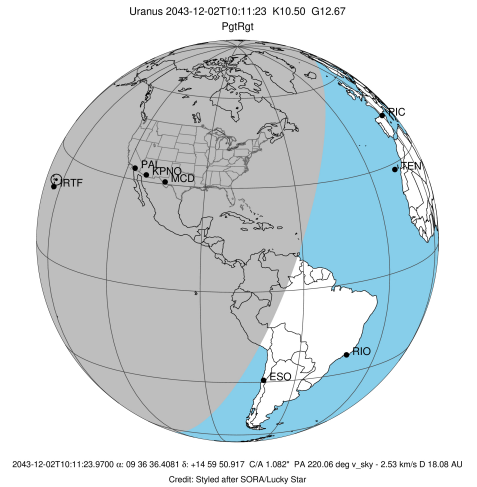
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-12-02T07:59:35.638		28.50	-76.12	50886.54	-5.71		
lambda	I	2043-12-02T08:02:06.339		29.03	-75.72	50026.71	-5.71		
delta	I	2043-12-02T08:07:08.817		30.11	-74.89	48300.35	-5.71		
gamma	I	2043-12-02T08:09:07.716		30.53	-74.55	47621.65	-5.71		
eta	I	2043-12-02T08:10:25.769		30.81	-74.32	47176.12	-5.71		
beta	I	2043-12-02T08:14:54.920		31.76	-73.54	45642.86	-5.71		
alpha	I	2043-12-02T08:17:37.900		32.34	-73.05	44702.82	-5.70		
4	I	2043-12-02T08:24:01.688	b	33.70	-71.88	42556.64	-5.70		
5	I	2043-12-02T08:24:35.376	b	33.82	-71.77	42256.10	-5.68		
6	I	2043-12-02T08:25:45.508	b	34.07	-71.55	41869.30	-5.68		
Uranus	I	2043-12-02T08:22:02.940		33.28	-72.24	25511.50		-36.30	-37.57
Uranus	E	2043-12-02T12:30:12.753		72.86	-20.63	25459.77		58.99	60.13
6	E	2043-12-02T11:51:50.807	b	71.80	-28.62	41831.07	6.19		
5	E	2043-12-02T11:52:54.199	b	71.89	-28.39	42168.76	6.18		
4	E	2043-12-02T11:53:37.508	b	71.94	-28.24	42554.78	6.21		
alpha	E	2043-12-02T11:59:36.303	b	72.36	-26.99	44749.40	6.25		
beta	E	2043-12-02T12:02:03.660	b	72.50	-26.48	45670.64	6.26		
eta	E	2043-12-02T12:06:04.621	b	72.70	-25.64	47176.12	6.29		
gamma	E	2043-12-02T12:07:17.004	b	72.75	-25.39	47631.55	6.30		
delta	E	2043-12-02T12:09:03.159	b	72.81	-25.02	48300.35	6.30		
lambda	E	2043-12-02T12:13:36.458	b	72.94	-24.07	50026.71	6.33		
epsilon	E	2043-12-02T12:17:34.903	b	73.00	-23.25	51537.85	6.35		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-12-02T10:24:15.450
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 617976559021588608
 2Mass ID (if available) : 09363642+1459513
 ICRS Star Coord at Epoch: 09h 36m 36.40809s +14:59:50.91739s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 10.500
 G magnitude : 12.670
 RP magnitude : 11.985
 BP magnitude : 13.210
 DUPflag : 0
 Distance (au) : 18.078
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.54
 Sun-Target sep (deg) : 107.96
 Sun-Moon sep (deg) : 117.29
 B (ring opening deg) : 25.75
 PA of pole (deg) : 99.88
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.050
 C/A sky separation (km) : 13770.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



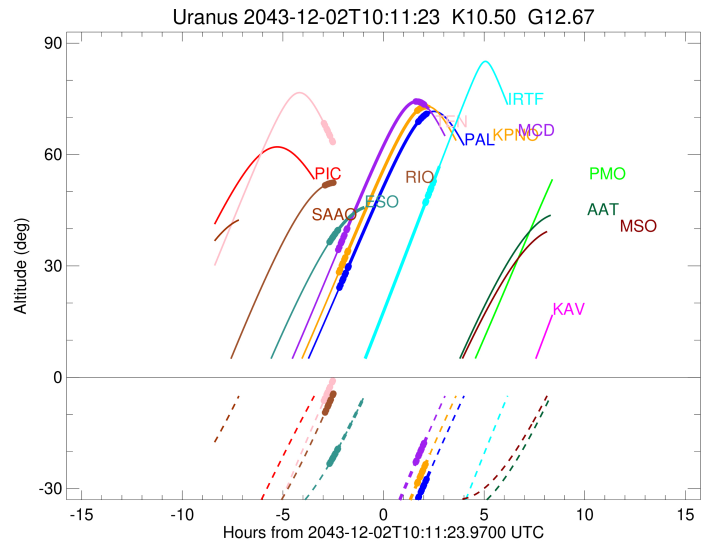
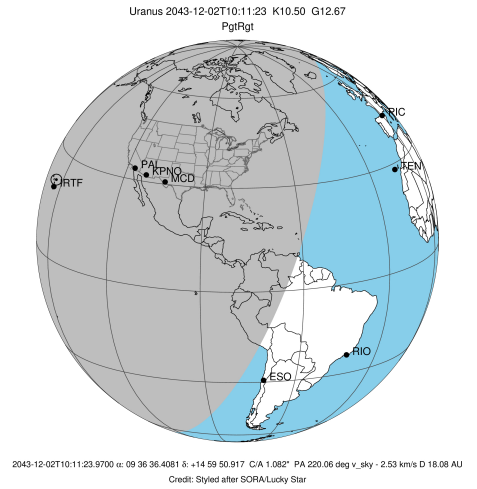
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-12-02T07:57:21.591		34.53	-71.74	50885.71	-5.80		
lambda	I	2043-12-02T07:59:49.808		35.06	-71.25	50026.71	-5.80		
delta	I	2043-12-02T08:04:47.653		36.13	-70.26	48300.35	-5.80		
gamma	I	2043-12-02T08:06:44.757		36.55	-69.87	47621.65	-5.80		
eta	I	2043-12-02T08:08:01.638		36.83	-69.61	47176.12	-5.79		
beta	I	2043-12-02T08:12:26.800		37.78	-68.71	45642.89	-5.79		
alpha	I	2043-12-02T08:15:07.421		38.36	-68.16	44702.74	-5.79		
4	I	2043-12-02T08:21:25.700	b	39.71	-66.86	42556.74	-5.78		
5	I	2043-12-02T08:21:58.862	b	39.83	-66.75	42256.27	-5.76		
6	I	2043-12-02T08:23:08.081	b	40.08	-66.51	41869.24	-5.76		
Uranus	I	2043-12-02T08:19:04.588		39.21	-67.35	25511.03		-36.51	-37.78
Uranus	E	2043-12-02T12:25:31.301		72.31	-15.01	25460.32		58.72	59.87
6	E	2043-12-02T11:47:28.016	b	74.28	-22.92	41831.23	6.19		
5	E	2043-12-02T11:48:31.326	b	74.29	-22.70	42168.58	6.19		
4	E	2043-12-02T11:49:14.654	b	74.30	-22.55	42554.62	6.22		
alpha	E	2043-12-02T11:55:13.276	b	74.25	-21.30	44749.45	6.25		
beta	E	2043-12-02T11:57:40.585	b	74.20	-20.78	45670.57	6.27		
eta	E	2043-12-02T12:01:41.540	b	74.07	-19.95	47176.12	6.29		
gamma	E	2043-12-02T12:02:53.928	b	74.02	-19.69	47631.55	6.29		
delta	E	2043-12-02T12:04:40.102	b	73.94	-19.33	48300.35	6.30		
lambda	E	2043-12-02T12:09:13.500	b	73.69	-18.38	50026.71	6.32		
epsilon	E	2043-12-02T12:13:12.161	b	73.42	-17.55	51538.27	6.35		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-12-02T09:43:09.900
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 617976559021588608
 2Mass ID (if available) : 09363642+1459513
 ICRS Star Coord at Epoch: 09h 36m 36.40809s +14:59:50.91739s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 10.500
 G magnitude : 12.670
 RP magnitude : 11.985
 BP magnitude : 13.210
 DUPflag : 0
 Distance (au) : 18.079
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.54
 Sun-Target sep (deg) : 107.96
 Sun-Moon sep (deg) : 117.41
 B (ring opening deg) : 25.75
 PA of pole (deg) : 99.88
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.308
 C/A sky separation (km) : 17149.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



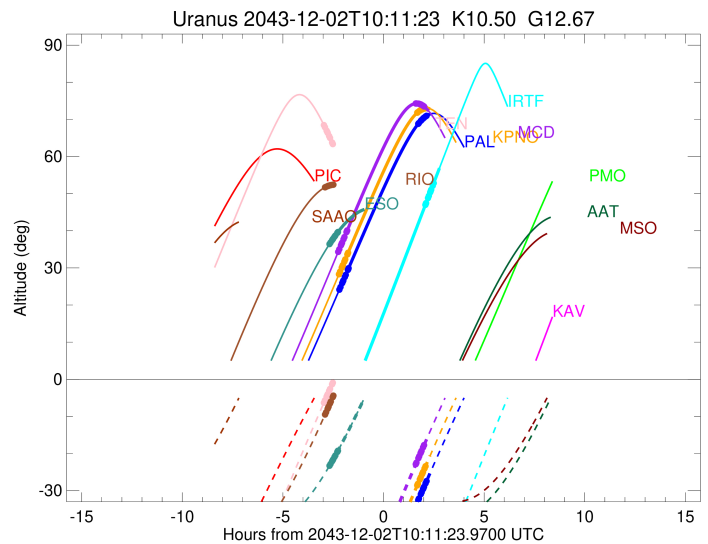
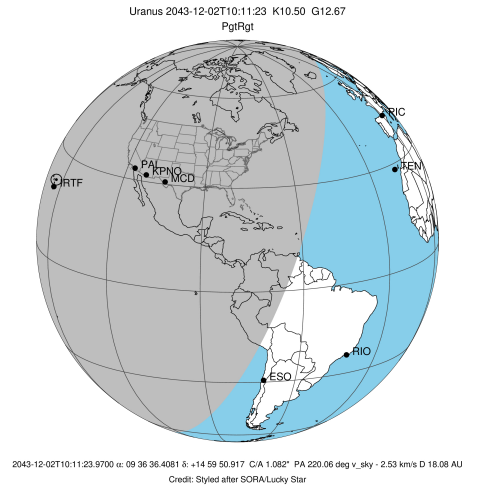
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-12-02T07:14:36.385		68.31	-6.13	50901.24	-5.95		
lambda	I	2043-12-02T07:17:04.002		67.85	-5.63	50026.71	-5.92		
delta	I	2043-12-02T07:21:56.635		66.94	-4.63x	48300.35	-5.88		
gamma	I	2043-12-02T07:23:52.136		66.57	-4.24x	47621.80	-5.87		
eta	I	2043-12-02T07:25:08.157		66.33	-3.99x	47176.12	-5.86		
beta	I	2043-12-02T07:29:31.197		65.48	-3.10x	45642.41	-5.82		
alpha	I	2043-12-02T07:32:10.763		64.96	-2.56x	44704.65	-5.80		
4	I	2043-12-02T07:38:30.512		63.71	-1.28x	42553.86	-5.74		
5	I	2043-12-02T07:39:05.488		63.59	-1.17x	42250.92	-5.71		
6	I	2043-12-02T07:40:13.261		63.37	-0.94x	41871.11	-5.71		
Uranus	I	2043-12-02T07:48:13.836		61.75	0.66x	25524.43		-30.32	-31.49
Uranus	E	2043-12-02T11:43:56.969		10.38	37.02x	25473.12		52.84	54.09
6	E	2043-12-02T11:08:08.947	b	18.19	33.63x	41835.02	5.25		
5	E	2043-12-02T11:09:22.591	b	17.92	33.76x	42164.86	5.25		
4	E	2043-12-02T11:10:15.059	b	17.73	33.86x	42550.99	5.27		
alpha	E	2043-12-02T11:17:18.033	b	16.18	34.61x	44750.49	5.30		
beta	E	2043-12-02T11:20:11.567	b	15.55	34.90x	45669.11	5.31		
eta	E	2043-12-02T11:24:56.180	b	14.52	35.36x	47176.12	5.33		
gamma	E	2043-12-02T11:26:21.629	b	14.21	35.50x	47631.49	5.33		
delta	E	2043-12-02T11:28:27.033	b	13.75	35.70x	48300.35	5.34		
lambda	E	2043-12-02T11:33:50.197	b	12.58	36.18x	50026.71	5.35		
epsilon	E	2043-12-02T11:38:34.007	b	11.55	36.59x	51545.44	5.36		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-12-02T10:48:12.420
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : IRTF
 Location : Mauna Kea/IRTF
 Latitude (deg) : 19.82622
 E. Longitude (deg) : 204.52800
 Altitude (km) : 4.168
 Gaia source ID : 617976559021588608
 2Mass ID (if available) : 09363642+1459513
 ICRS Star Coord at Epoch: 09h 36m 36.40809s +14:59:50.91739s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 10.500
 G magnitude : 12.670
 RP magnitude : 11.985
 BP magnitude : 13.210
 DUPflag : 0
 Distance (au) : 18.078
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.54
 Sun-Target sep (deg) : 107.96
 Sun-Moon sep (deg) : 116.63
 B (ring opening deg) : 25.75
 PA of pole (deg) : 99.88
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.901
 C/A sky separation (km) : 11810.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



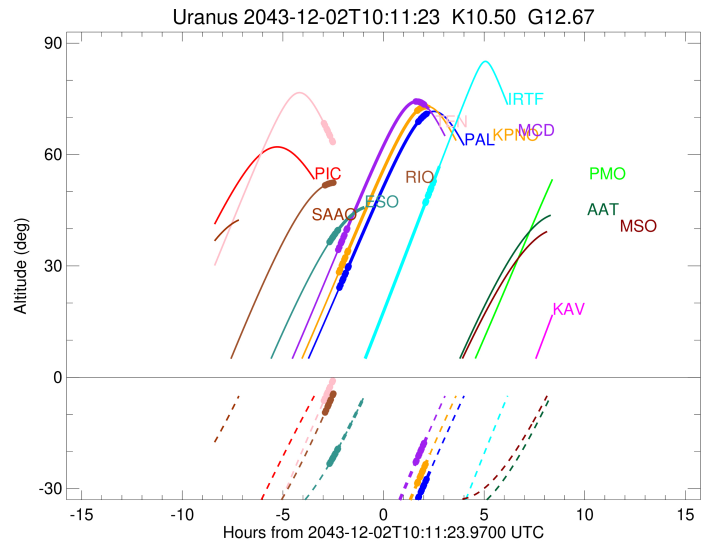
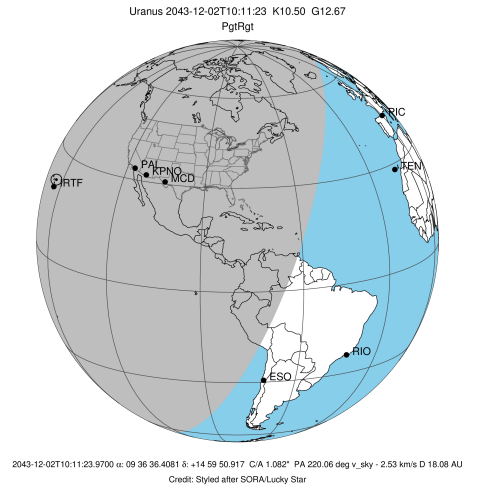
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-12-02T08:04:17.439		-11.31x	-60.35	50883.46	-5.14		
lambda	I	2043-12-02T08:07:04.377		-10.69x	-60.99	50026.71	-5.14		
delta	I	2043-12-02T08:12:40.029		-9.45x	-62.29	48300.35	-5.15		
gamma	I	2043-12-02T08:14:51.741		-8.96x	-62.80	47621.62	-5.16		
eta	I	2043-12-02T08:16:18.121		-8.64x	-63.13	47176.12	-5.16		
beta	I	2043-12-02T08:21:15.548		-7.53x	-64.28	45642.99	-5.17		
alpha	I	2043-12-02T08:24:15.444		-6.86x	-64.98	44702.33	-5.18		
4	I	2043-12-02T08:31:17.448	b	-5.28x	-66.61	42557.45	-5.19		
5	I	2043-12-02T08:31:53.973	b	-5.15x	-66.75	42257.57	-5.17		
6	I	2043-12-02T08:33:11.557	b	-4.86x	-67.05	41868.75	-5.18		
Uranus	I	2043-12-02T08:26:00.617		-6.47x	-65.38	25508.19		-37.76	-39.05
Uranus	E	2043-12-02T12:58:13.998		56.87	-51.01	25453.41		62.16	63.22
6	E	2043-12-02T12:16:12.172	b	46.95	-60.74	41828.41	6.16		
5	E	2043-12-02T12:17:16.340	b	47.20	-60.49	42171.73	6.16		
4	E	2043-12-02T12:17:59.105	b	47.37	-60.33	42557.46	6.19		
alpha	E	2043-12-02T12:23:58.866	b	48.79	-58.94	44748.50	6.23		
beta	E	2043-12-02T12:26:26.749	b	49.37	-58.37	45671.67	6.25		
eta	E	2043-12-02T12:30:28.032	b	50.32	-57.43	47176.12	6.28		
gamma	E	2043-12-02T12:31:40.536	b	50.60	-57.15	47631.57	6.29		
delta	E	2043-12-02T12:33:26.826	b	51.02	-56.74	48300.35	6.30		
lambda	E	2043-12-02T12:38:00.283	b	52.10	-55.69	50026.71	6.33		
epsilon	E	2043-12-02T12:41:57.532	b	53.03	-54.77	51530.92	6.36		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-12-02T09:38:21.410
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 617976559021588608
 2Mass ID (if available) : 09363642+1459513
 ICRS Star Coord at Epoch: 09h 36m 36.40809s +14:59:50.91739s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 10.500
 G magnitude : 12.670
 RP magnitude : 11.985
 BP magnitude : 13.210
 DUPflag : 0
 Distance (au) : 18.079
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.54
 Sun-Target sep (deg) : 107.96
 Sun-Moon sep (deg) : 117.57
 B (ring opening deg) : 25.75
 PA of pole (deg) : 99.88
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.848
 C/A sky separation (km) : 11116.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-12-02T07:18:07.963		51.75	-9.31	50862.94	-6.28		
lambda	I	2043-12-02T07:20:21.386		51.85	-8.85	50026.71	-6.27		
delta	I	2043-12-02T07:24:57.084		52.03	-7.92	48300.35	-6.26		
gamma	I	2043-12-02T07:26:45.609	b	52.10	-7.55	47621.45	-6.25		
eta	I	2043-12-02T07:27:56.833	b	52.14	-7.31	47176.12	-6.25		
beta	I	2043-12-02T07:32:02.744	b	52.25	-6.47	45643.64	-6.24		
alpha	I	2043-12-02T07:34:32.490	b	52.31	-5.96	44700.28	-6.24		
4	I	2043-12-02T07:40:23.179	b	52.40	-4.75x	42560.54	-6.22		
5	I	2043-12-02T07:40:52.324	b	52.41	-4.65x	42262.99	-6.20		
6	I	2043-12-02T07:41:59.196	b	52.42	-4.42x	41866.64	-6.20		
Uranus	I	2043-12-02T07:25:19.909		52.05	-7.84	25493.69		-43.99	-45.31
Uranus	E	2043-12-02T11:55:32.090		18.51	51.61x	25454.46		61.62	62.70
6	E	2043-12-02T11:11:45.811	b	27.39	41.63x	41828.63	5.97		
5	E	2043-12-02T11:12:52.095	b	27.17	41.88x	42171.46	5.96		
4	E	2043-12-02T11:13:36.415	b	27.02	42.05x	42557.21	5.98		
alpha	E	2043-12-02T11:19:49.912	b	25.79	43.46x	44748.60	5.98		
beta	E	2043-12-02T11:22:24.155	b	25.28	44.05x	45671.55	5.98		
eta	E	2043-12-02T11:26:36.746	b	24.44	45.00x	47176.12	5.98		
gamma	E	2043-12-02T11:27:52.857	b	24.18	45.29x	47631.57	5.98		
delta	E	2043-12-02T11:29:44.617	b	23.81	45.72x	48300.35	5.98		
lambda	E	2043-12-02T11:34:33.132	b	22.83	46.81x	50026.71	5.98		
epsilon	E	2043-12-02T11:38:44.791	b	21.98	47.77x	51532.10	5.98		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2043-12-02T09:51:39.130
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : ESO
 Location : European Southern Obs. (3.6m)
 Latitude (deg) : -29.26097
 E. Longitude (deg) : 289.26831
 Altitude (km) : 2.400
 Gaia source ID : 617976559021588608
 2Mass ID (if available) : 09363642+1459513
 ICRS Star Coord at Epoch: 09h 36m 36.40809s +14:59:50.91739s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 10.500
 G magnitude : 12.670
 RP magnitude : 11.985
 BP magnitude : 13.210
 DUPflag : 0
 Distance (au) : 18.079
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -2.54
 Sun-Target sep (deg) : 107.96
 Sun-Moon sep (deg) : 117.50
 B (ring opening deg) : 25.75
 PA of pole (deg) : 99.88
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.714
 C/A sky separation (km) : 9362.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2043-12-02T07:31:26.969		36.56	-23.14	50855.17	-6.18		
lambda	I	2043-12-02T07:33:41.095		36.87	-22.79	50026.71	-6.18		
delta	I	2043-12-02T07:38:20.475	b	37.50	-22.06	48300.35	-6.18		
gamma	I	2043-12-02T07:40:10.321	b	37.74	-21.77	47621.38	-6.18		
eta	I	2043-12-02T07:41:22.351	b	37.89	-21.57	47176.12	-6.18		
beta	I	2043-12-02T07:45:30.800	b	38.43	-20.91	45643.97	-6.18		
alpha	I	2043-12-02T07:48:02.162	b	38.75	-20.50	44699.34	-6.18		
4	I	2043-12-02T07:53:55.049	b	39.47	-19.53	42562.11	-6.19		
5	I	2043-12-02T07:54:23.775	b	39.52	-19.45	42265.68	-6.16		
6	I	2043-12-02T07:55:32.036	b	39.66	-19.26	41865.50	-6.17		
Uranus	I	2043-12-02T07:34:28.745		36.98	-22.67	25487.62		-46.57	-47.88
Uranus	E	2043-12-02T12:08:31.577		32.84	30.84x	25451.54		63.14	64.18
6	E	2043-12-02T11:25:16.120	b	38.91	21.60x	41826.73	6.27		
5	E	2043-12-02T11:26:19.555	b	38.78	21.82x	42173.75	6.26		
4	E	2043-12-02T11:27:01.290	b	38.69	21.97x	42559.17	6.28		
alpha	E	2043-12-02T11:32:56.445	b	37.93	23.22x	44747.91	6.29		
beta	E	2043-12-02T11:35:23.249	b	37.61	23.75x	45672.26	6.29		
eta	E	2043-12-02T11:39:23.300	b	37.08	24.60x	47176.12	6.29		
gamma	E	2043-12-02T11:40:35.655	b	36.92	24.86x	47631.58	6.30		
delta	E	2043-12-02T11:42:21.879	b	36.67	25.23x	48300.35	6.30		
lambda	E	2043-12-02T11:46:55.999	b	36.04	26.21x	50026.71	6.30		
epsilon	E	2043-12-02T11:50:54.132	b	35.47	27.06x	51526.84	6.30		